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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/759,334	01/16/2001	Koichi Fujimori	3693-12	2551

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EXAMINER

AKKAPEDDI, PRASAD R

ART UNIT PAPER NUMBER

2871

DATE MAILED: 01/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/759,334

Applicant(s)

FUJIMORI ET AL.

Examiner

Prasad R Akkapeddi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-10 and 12-14 is/are rejected.
- 7) ☒ Claim(s) 3 and 11 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. ____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> . | 6) <input type="checkbox"/> Other: |

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-2, 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ha et al. (Ha) (U.S. Patent No. 6,493,051) in view of Jones et al. (Jones) (U.S. Patent No. 5,963,284).

a. As to claims 1-2 and 4-5: Ha discloses a liquid crystal display device with a first substrate (111), a second substrate (101), a liquid crystal layer (121) disposed between the first substrate and the second substrate and a plurality of pixel regions (109, 107) for display, wherein each of the plurality of pixel regions includes a transmission region (109) for display in a transmission mode using light (110) entering through the first substrate (111) and a reflection region (107) for display in a reflection mode using light entering through the second substrate (101), the first substrate includes, on a surface thereof facing the liquid crystal

layer, a transparent electrode region (109) defining the transmission region and a reflection electrode region (107) defining the reflection region, each surface facing the liquid crystal layer of the transparent electrode region and the reflection electrode region of the first substrate being flat (Fig. 5), and the second substrate (101) includes a transparent electrode (105) in the reflection region and the transmission region, the surface thereof facing the liquid crystal layer being flat in the transmission region and the reflection region (Fig. 5). Although Ha discloses all the limitations for the liquid crystal display, Ha does not disclose a light diffuser on the second substrate. Jones on the other hand, in disclosing a liquid crystal display of transfective type (Col. 5, line 35), discloses the use of a light diffuser in the second substrate both in the reflective (107) and transmission regions (109) that faces the liquid crystal layer and is formed on a surface of the transparent substrate closer to an observer i.e., on the substrate (17). Both Ha and Jones also discloses the use of a polarizers (103 and 19 respectively). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the light diffuser disclosed by Jones to the display device disclosed by Ha to enhance the brightness of the display.

4. Claims 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ha and Jones as applied to claims 1 and 5 above, and further in view of Okumura (U.S. Patent No. 6,008,871).

b. As to claims 6-7: Neither Ha nor Jones explicitly disclose the specific placement of the diffuser, except that it is located on the second substrate.

Okumura on the other hand, in disclosing a similar transreflective liquid crystal display device, disclose (Col.6, lines 56-65) that the diffuser (light scatter plate 107) is an adhesive layer and it can be located at different locations within the display device. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the light diffuser placements disclosed by Okumura to the display device disclosed by Ha and Jones to enhance the brightness of the display.

5. Claims 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ha in view of Jones.

c. Ha does not disclose a diffuser, however, Jones discloses that the light diffusion layer contains a matrix material (53) and particles (51) having a refractive index different from that of the matrix material (Col. 6, lines 21-22). Jones also discloses that the second substrate (17) includes a transparent substrate and a color filter layer (65), and the color filter layer functions also as the light diffusion layer (Col. 7, lines 26-29). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the diffusion layer containing a matrix material and particles in the matrix to the display device disclosed by Ha to reduce image parallax or pixel cross talk and minimize polarization effects.

6. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jones.

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d. Jones discloses that the host material with the particles can be spin coated onto a substrate (Col. 6, lines 58-59). However, Jones discloses that the substrate is made out of glass and does not explicitly disclose that the substrate could be made out of plastic material. However, the use of plastic substrates for liquid crystal display devices is known and is common (see for example U.S. Patent No. 6,359,668). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the plastic substrate to the display device disclosed by Jones to make these devices lightweight.

7. Claims 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ha and Jones as applied to claim 1 above, and further in view of Okumura.

e. Jones discloses an anti reflection coated glass (Col. 9, lines 5-6). However, Jones does not teach the placement location of this material. Okumura on the other hand, discloses several locations for various elements including the diffusion layer as mentioned earlier. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to adapt the light diffuser placements disclosed by Okumura to the display device disclosed by Ha and Jones to enhance the brightness of the display.

Allowable Subject Matter

8. Claims 3 and 11 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

9. The following is an examiner's statement of reasons for allowance:

Prior art does not teach or suggest that (a) the second substrate of the liquid crystal device includes the light diffusion layer in the reflection region alone and (b) the thickness of the liquid crystal layer in the reflection region is about $\frac{1}{2}$ of a thickness of the liquid crystal layer in the transmission region.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prasad R Akkapeddi whose telephone number is 703-305-4767. The examiner can normally be reached on 7:00AM to 5:30PM M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H Kim can be reached on 703-305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0530.

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PRA

December 16, 2002

W
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